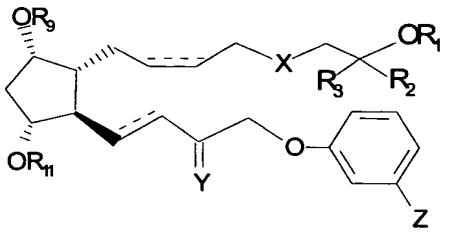
of said compound:



(IV)

wherein:

R_1 = H; C_1-C_{12} straight-chain or branched alkyl; C_1-C_{12} straight-chain or branched acyl; C_3-C_8 cycloalkyl; or a cationic salt moiety;

R_2, R_3 = H, or C_1-C_5 straight-chain or branched alkyl; or R_2 and R_3 taken together may represent O;

X = O, S, or CH_2;

---- represents any combination of a single bond, or a *cis* or *trans* double bond for the alpha (upper) chain; and a single bond or *trans* double bond for the omega (lower) chain;

R_9 = H, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl;

R_{11} = H, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl;

Y = O; or H and OR_{15} in either configuration wherein R_{15} = H, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl; and

Z = Cl or CF_3;

with the proviso that when R_2 and R_3 taken together represent O, then $R_1 \neq$ C_1-C_{12} straight-chain or branched acyl; and when $R_2 = R_3$ = H, then $R_1 \neq$ a cationic salt moiety; and

with the further proviso that the following compound be excluded:

cyclopentane heptenol-5-*cis*-2-(3-αhydroxy-4-m-chlorophenoxy-1-trans-butenyl)-3,5 dihydroxy, [1_α, 2_β, 3_α, 5_α].

25. The method of claim 24, wherein for the compound (IV):

R_2, R_3 taken together represent O;

X = CH_2;

--- represents a *cis* double bond for the alpha (upper) chain and a *trans* double bond for the omega (lower) chain;

R_9 and R_{11} = H; and

Y = OH in the alpha configuration and H in the beta configuration.

26. The method of claim 25, wherein for the compound (IV): Z = CF_3.

27. The method of claim 24, wherein: $R_2 = R_3$ = H, or R_2 and R_3 taken together represent O; X = O or CH_2; $R_9 = R_{11}$ = H; Y = H and OR_{15}; and R_{15} = H.

28. The method of claim 27, wherein: R_1 = H, C_1-C_{12} straight chain or branched alkyl or cationic salt moiety; and R_2 and R_3 taken together represent O.

29. The method of claim 28, wherein the compound of formula (IV) is selected from the group consisting of 3-oxacloprostenol, 13,14-dihydrofluprostenol, and their pharmaceutically acceptable esters and salts.

30. The method of claim 27, wherein: R_1 = H or C_1-C_{12} straight chain or branched acyl; and $R_2 = R_3$ = H.

31. The method of claim 30, wherein the compound formula (IV) is 13,14-dihydrocloprostenol pivaloate.

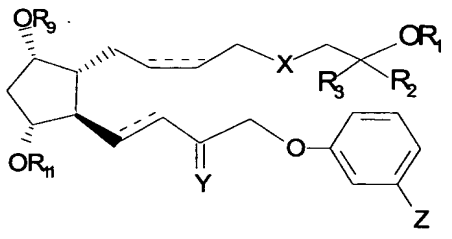
33

32. The method of claim 24, wherein between about 0.01 and about 1000 μg/eye of the compound is administered.

33. The method of claim 32, wherein between about 0.1 and about 100 μg/eye of the compound is administered.

34. The method of claim 38, wherein between about 0.1 and about 10 μg/eye of the compound is administered.

35. A topical ophthalmic composition for the treatment of glaucoma and ocular hypertension comprising an ophthalmically acceptable carrier and a therapeutically effective amount of a compound having the absolute stereochemical structure of the following formula (IV), and being substantially free of the enantiomer of said compound:



(IV)

wherein:

R_1 = H; C_1-C_{12} straight-chain or branched alkyl; C_1-C_{12} straight-chain or branched acyl; C_3-C_8 cycloalkyl; or a cationic salt moiety;

R_2, R_3 = H, or C_1-C_5 straight-chain or branched alkyl; or R_2 and R_3 taken together may represent O;

X = O, S, or CH_2;

---- represents any combination of a single bond, or a *cis* or *trans* double bond for the alpha (upper) chain; and a single bond or *trans* double bond for the omega (lower) chain;

R_9 = H, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl;

R_{11} = H, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl;

Y = O; or H and OR_{15} in either configuration wherein R_{15} = H, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl; and

Z = Cl or CF_3;

with the proviso that when R_2 and R_3 taken together represent O, then $R_1 \neq C_1$-C_{12} straight-chain or branched acyl; and when $R_2 = R_3$ = H, then $R_1 \neq$ a cationic salt moiety; and

with the further proviso that the following compound be excluded:

cyclopentane heptenol-5-*cis*-2-(3-αhydroxy-4-m-chlorophenoxy-1-trans-butenyl)-3,5 dihydroxy, [1_α, 2_β, 3_α, 5_α].

13 12
36. The composition of claim ~~35~~, wherein for the compound (IV):

R_2, R_3 taken together represent O;

X = CH_2;

--- represents a *cis* double bond for the alpha (upper) chain and a *trans* double bond for the omega (lower) chain;

R_9 and R_{11} = H; and

Y = OH in the alpha configuration and H in the beta configuration.

11 13
37. The composition of claim ~~36~~, wherein for the compound (IV): Z = CF_3.

12
38. The composition of claim ~~35~~, wherein: $R_2 = R_3$ = H, or R_2 and R_3 taken together represent O; X = O or CH_2; $R_9 = R_{11}$ = H; Y = H and OR_{15}; and R_{15} = H.

35